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FACT SHEET

Rapid Assessment Vehicle Engineer - RAVEN

The RAVEN is a small 4-wheel drive vehicle that provides numerous capabilities. A GPS antennae mounted on the vehicle allows for positioning data to be collected using a real time kinematic GPS system. The vehicle is able to gather topographic data with very high accuracy (cm level) in a very small amount of time compared to traditional survey techniques.

There are two primary workstations on the vehicle, both with a Panasonic Tough Book computer. One is in the cab of the vehicle and the other is located in the utility box on the back of the vehicle. These workstations are equipped with all of the necessary software to conduct technical engineer operations for survey, design, and soils analysis.

Soldier performing geometric design in the RAVEN

Rapid soils testing on the RAVEN

The utility boxes on the rear of the vehicle provide storage for all of the GPS equipment, power generation via a diesel generator, and a small soils analysis station. The soils analysis workstation allows the user to conduct microwave moisture test, grain size distribution, and plastic limit test. The workstation on the rear of the vehicle also houses the components of the TeleEngineering Communications Equipment - Deployable. This system allows the user to communicate via secure satellite transmissions all critical information being obtained. The utility box on the back of the vehicle can also be separated which would provide simultaneous use of the vehicle and the soils laboratory.

The Automated Route Reconnaissance Kit (ARRK) is installed on the RAVEN. This system provides the capability to conduct engineer type reconnaissance and record information such as GPS trace of the route, still image from the view of the driver, geometry of the route being driven, and location of critical facilities (bridges, intersections, etc.).

Because the RAVEN is based on the BOBCAT Toolcat platform, there are several implement attachments that can be used on the front of the vehicle. Currently, the RAVEN has a bucket, extended forks for lifting pallets, and an automated Dynamic Cone Penetrometer (DCP). The automated DCP allows a soil strength test to be conducted from inside the cab, and the test results are stored on the computer located inside the vehicle.

RAVEN is used on bomb crater repair

RAVEN with automated DCP attachment

The RAVEN is also equipped with autonomous controls. This capability allows the vehicle to be operated from remote locations via a joystick and a series of cameras mounted on board, or controlled by the on-board computer and software in a completely autonomous mode. This type of operation would allow the vehicle to conduct such tasks as surveying a large area with detailed coverage or sweeping a large runway to eliminate debris with precision and minimum human interaction.

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